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On the Battle-Scarred Fields of France.

A Physician's Impressions of the Medical Services
of Both the French and German Armies.

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On the Battle-Scarred Fields of France.

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THESE LINES are just impressions; they are not intended to be raised to the dignity of a complete account of the status of the medico-surgical and sanitary organization of the belligerents. Rather are they the findings of a student, who was willing to learn, by keeping his mouth shut and his eyes and ears open to all that was to be seen and heard, near and around him, in those memorable days of the latter part of 1914, when it was his privilege to be in the war zone.

It is by the mistakes of yesterday that we learn how to do better today and, still better on the morrow.

With this fact well grounded in my mind, and feeling as every red-blooded American has felt long since, that sooner or later our own fair land would be drawn into the vortex of the maelstrom that engulfs Europe, by a force over which we had no control; this fact, I say, decided me then and there to see as much as I was permitted to see, and to assimilate as much as I could assimilate for the purpose, that, should ever the time arrive, I might be able to narrate my experiences thus garnered for the use and benefit of the Service of our own Army.

When the fate of two nations is hanging in the balance on the point of the sword, one can readily conceive why the movements of a stranger must, of necessity, be limited. The best of credentials under those conditions count for naught. You simply have to look pleasant, smile and be grateful for ever so tiny a glimpse you are permitted of what is going on behind the curtain; hence, what I shall relate is only fragmentary of what I have seen at the time and places of my visits; but I shall relate facts, pure and simple, such as I possess them. For this very same reason I shall refrain from commenting on the French or the German services. Suffice it to say, that they are different—must be different—by the very essence and nature of things; and, what is more, by reason of the different conditions under which these two services were and are still operating, their status is not a fixed one but is one that is subject to change from day to day, from hour to hour, according to the pressure and exigencies of the fortunes of war, under which the contending forces operate. Hence, conditions were different at different posts of the

same units, and often similar or nearly alike in the posts of contending armies. War is not a respecter of fixed rules and well-balanced, sedate orders. It strikes with fulminating rapidity at everything, here, there, everywhere.

C'est la guerre!

Et à la guerre, comme à la guerre,
Voilà tout!

The Sudden Tide of Invasion

With the force of a steam-roller Germany first invaded little Belgium, then overran, in those critical days of August, 1914, northern France. Hundreds and hundreds of kilometers she occupied by force of arms—away from her own borders.

She was then, as she is now, with both heels in enemy's land, knocking at the capital's door and stretching forth her mailed fist to grab some more vital points, some more important cities. Yet, with a stout heart and an indomitable will not to be conquered. France fought and fights yet, valiantly, courageously, heroically, so as to compel the admiration of even her hereditary foe. In her medico-military service, France had then, as she has now, a decided advantage. She could then, as she can now, rely on the good-will of her home towns, her cities, big and small, wherein to mobilize and distribute to best advantage her mobile military medical and sanitary service. But not so with Germany; she, the invader, was and is in this respect at a disadvantage. She was compelled to create, to equip and to provide for, new hospital units in enemy territory, a territory naturally hostile to her forces, a territory often destroyed by enemy and friend alike, according to the tragic exigencies of the war. And what was the result?

German Method

With an uncaunty, methodical effort she overcame the obstacles and solved thus her sanitary problems; and, while France could call and did call into her service her city halls, her public buildings, her hotels, and transformed these into establishments for the care of her wounded and ill, distributing them in proximity to the firing lines, apportioning her units in a methodical manner, thanks to the innate patriotism of the French nation, such units sprang into existence like mushrooms, over night, while private homes threw open

their portals to welcome the defenders of France, each and every citizen vying with each other to outdo themselves in deeds of patriotism, nothing of the kind happened to Germany. She was compelled to rely wholly and solely on her own military-sanitary organization and the resources of her own Red Cross body, hence she was by force of necessity compelled to create new and great hospital units, so that there should emerge, as it did emerge, a nucleus, with a kind of centralization power, for the better care and surveillance of her stricken and wounded.

The question now arises: how did she do it? Well, first of all, she brought from Germany into the invaded and occupied territory large barracks. Those barracks constituted the nuclei spoken of above. These she managed to dispose *near* to and *around* industrial centers. There she seized the immense factories that dotted these regions, converted them into hospitals, and when such a factory was entirely or partially wrecked, she took it upon herself to rebuild or to repair the damage. The wounded that could stand a protracted transport were transferred to her own soil. There, too, as in France, her people opened their doors to the wounded and maimed to give them the best of care. Recuperating places sprang into existence, maintained either by private means or by the Government. Thus the President of the Reichstag turned over his palace for the use and comfort of the wounded. But the *ideal* places for such purposes, as I found them extant in Nizza, Marseilles, Lyons, Dijon and Paris, I have found nowhere within the German lines, and I have visited a good many of them—before Rheims, Verdun, St. Quentin as well as at Valenciennes and Brussels.

The Sanitary Services

With reference to the structural organization of the sanitary services of the two parties, all I have to say is, that they are made up almost on identical lines. Thus, the French *Poste de secours* finds its equivalent in the German *Truppen Verbandplatz*; the French *Hospital de Campagne* is the German *Feld-Lazarett*; the *Hospital d'Etapes* is the German *Etappen Lazarett*, while the *Hospital de reserve* finds its counterpart in the *Reserve und Vereins-Lazarett*.

In the armies of both nations the soldier is furnished with a small sterilized emergency package, so disposed that the lightly wounded may apply it to himself without incurring any danger. The German package is smaller and more compact than the French one; it is easier to handle, and it is enclosed in a little pocketbook hung obliquely over the left side of the jacket, from where it can be reached, extracted and opened by either hand, while the French carry in addition to these emergency packets some vials filled with the tincture of

iodine, with a view that the wounded himself may, even before medical help can reach him, disinfect his wounds, provided he is wounded only very lightly. Heiney and Fritz must forego this vial, because it has been found that Heiney is rather given over to the idea of "the more, the better," and his indiscriminate and lavish use of the tincture had caused him some startling and unpleasant after-effects. Hence, he must await his regimental doctor's service, either in the trenches themselves or at the *Truppen-Verbandplatz*, and where a medical officer is not available, some medical nurse is surely there to attend to his first-aid needs. The wounded are gathered together into the *Truppen-Verbandplatz*; those able to march go there on foot, or they are brought in by litter-bearers. The wounded may or may not have received first medical aid by that time; but at the *Truppen-Verbandplatz* more appropriate attention is given to the nature of the wound and the adequate and appropriate handling of the case proper. Here the most urgent cases come first; thus, those that have been gassed or nearly asphyxiated, are quickly resuscitated; collapse, severe hemorrhages are immediately overcome by proper measures; fractures are coapted, dislocations reduced, and the injured limb immobilized. Limbs that cannot be saved are here, if possible, amputated, and every wounded man is guarded against tetanus by the injection of antitetanic serum.

When the *Verbandplatz* is too busy, those that can march go then to the nearest *Haupt-Verbandplatz*, or they are taken there by litter-bearers; or they may even go to the nearest *Feld-Lazarett*. For those who cannot be removed or cannot come out from the trenches, because such an attempt would be too perilous an undertaking by reason of the enemy's fire—for those then, wherever it is possible, the regimental officers must step in and take care of them; but, more often, owing to the peril that attends their bringing in, these poor wounded must remain just where they are until late at night, or perhaps they must await a more propitious moment to be taken up and brought in.

Terrible Battle Conditions

I have witnessed cases, and I have it from the lips of the wounded themselves, that often many of them had lain in the path of the raging battle for four or even five agonizing days without any aid whatsoever. Late at night I have often seen the Sanitary Corps come out and go directly toward the trenches and the battle lines; a long line they form of sanitary vehicles; these were drawn by horses because of the impassability of the roads and the impracticability for the use of automobiles, for, besides the light projected by the automobile reflectors, the noise produced by the motor

readily attracts the attention of the enemy and constitutes the main drawback to their use. Hence, autos are used only when and where the roads are in good condition between the *Hauptverbandplatz* and the *Feldlazarett*, or where their line of communication is, even in the daytime, safe from the enemy's fire.

Location of Units

The Sanitary Section takes its place near to but yet at a safe distance from and behind the firing line. It is somewhat farther in the rear than the *Truppen-Verbandplatz*, protected as much as it is possible to protect it from the artillery of the enemy; this is, with respect to the care of the wounded, the most important post of the entire sanitary service, simply because these first treatments are often the treatments that are the deciding factors of the fate of the wounded. Especially is this true of present-day warfare methods. From there the wounded are rapidly removed to a surgical post, where, with adequate means, instruments, and under the special care of trained masters in combating diseases, many a grave surgical complication that otherwise would have manifested itself, is thus forestalled.

One of these German sanitary sections I visited was located near a wood, half buried in the ground to facilitate its heating up. The roof was, as it is, as a rule, in such cases, covered with green branches of pine, birch or other trees. These branches are their *camouflage*, serving for the purpose of hiding their existence from the ever-vigilant eyes of the enemy aeroplanes. All the barracks that belong to such a section can be put up within two hours and taken down in less than one hour's time. They have operating rooms for septic as well as operating rooms for aseptic cases, and also disinfecting rooms, etc. The service of each unit is constituted by the personnel of nine officers. Three of these are surgeons, four medics, one is an oculist, one a chaplain, and a number of nurses, and it can accommodate two hundred wounded.

The Typical German Soldier

The German soldier combines his industry with an instinct of organization; therefore, the moment he enters a section he sets himself to the self-imposed task of bettering his condition by making his quarters more comfortable by adding to it, despite the fact that he is well aware that he might have to relinquish his hold on his quarters any moment to the *Franzman*. Thus, I saw that, in addition to the regulation barracks in a little wood, hardly 6 km. from the firing line, ever so many more additions made with the wood that the forest offers. Some served for additional sick wards, one was used as a chapel, others were for the officers' club rooms, while still others served as extensions to the kitchens. There were also spacious stables,

large enough to accommodate from 50 to 100 horses, and garages for the housing of the autos used by that sanitary unit. There was enough space there to accommodate with comfort 200 wounded, besides its staff members and personnel of the infirmary service. There were also kennels for the housing of wolf-dogs. These dogs were trained to explore the battlefield and even to venture into "No Man's Land," to search, find and assist in the bringing in of many a wounded soldier; and let me record it here, to their everlasting credit, these intelligent animals performed deeds that were simply stupendous.

Hans "Kept the Pig in the Corner"

In the same unit there was also space staked off for the fattening of swine; they were fed on all the table refuse, and they, in turn, furnished Heiny in due time with some dainty morsels of ham and other porcine delicacies.

The rooms were equipped with instruments and sterilization apparatus, such as one would expect to encounter in a first-class, modern hospital, ready to cope with any major operation.

Makeshift Bedding

Beside the reglementary ambulance bedstead, there were others to be seen of quite a different pattern. Here, too, the practical proclivities of the German mind came to the service for a good purpose. The reason for it was as follows: their march, in its initiatory phase, was executed with great rapidity; it was because of the able Fabian strategy of Joffre, beyond their own expectations, hence, in such an onslaught, and they being the aggressors, it was natural that their casualties should, as they did, pile up to a degree they never expected it to attain. Therefore, not being prepared for such an emergency, they were short of beds; but the commissariate carried foodstuffs well packed in wooden cases. These cases they utilized, and thus with this rough material they built 8,000 beds, roughly made to be sure, but quite comfortable and provided with straw mattresses where hair mattresses were not to be had.

Operating at Night

Inasmuch as the wounded were all brought to the *Haupt-Verbandplatz* or the *Feld-Lazarett* in the dead of the night, it follows that the operations were performed, for the most part, at night. Hardly had the ambulances arrived at their destination when the work to operate was started. The operating rooms were lighted either by gas or by alcohol lamps. Everything worked clip-clap in the first and best of shape, under the most rigorous observance of aseptic methods, each of the operators a specialist in his line of work, with assistants trained to interpret a motion, to anticipate a move, and to know beforehand the desire of their masters. Under such conditions it is not to be won-

dered at that even the most difficult operations were fruitful of splendid results. Especially is this true when we remember how much depends on a correct operative measure, how much it influences the outcome of a major operation performed either on the head or in the abdominal cavity. In the latter case we know that the prognosis is by far a better one if we are able to operate within twelve hours after the wound has been sustained; this, plus adequate preparations in an adapted locality, and provided with the best of surgical means handled by competent operators, who have all the time at their disposition to do first-class work, nothing more ideal could be desired; and all these conditions were, in 1914, prevalent in most of the German sanitary campaign units.

Deferred Surgery

But to every obverse of a medal there is the reverse side of it, and so it was with their cases, just as there is a shadow to every light. Not all of the units presented such a roseate hue as described above. There were cases, naturally, which for obvious reasons could not be operated upon within the ideal time limit of twelve hours; and there were cases for which neither the surroundings, nor the means, nor the surgeons best fitted to cope with all the intricacies of a fine technic that the gravity of the case required were at hand; then, of course, they had to rely on the *vis medicatrix naturae* of the individual and hope for the best.

Fearful Sight

The spectacle of thousands and thousands of bits of humanity, shot to pieces in all sorts of shapes and forms, is not a cheery one; and going from bed to bed, visiting and ministering to them, easing their pain and cooling their aching brows, requires a stout heart and a particular heroic nature of its own.

Glory to the doctors of any race who, with a self-abnegation second to none devote the best that there is in them, so that pain may be assuaged and a life may be saved! They should do this unselfishly, indiscriminatingly, be the issue the life of a friend or that of a foe. Before the majesty of suffering all enmity should cease, and the charity and the divine brotherhood of men come into its own and reign supreme.

Oft I have asked myself the question: "What is the hardest thing to contend with among the Golgothas of sorrow and pain?" and I frankly admit that I cannot say with precision what it is. I saw some terrible cases of disfigurement and I met some horrible poison cases, but the most pitiful cases, to my mind, were the shell-shock cases.

In one of the sections I had occasion to inspect a few laparotomy cases which had been operated upon early, and consequently all were now on the high road to recovery. In all these cases the

wounds were caused by small firearms. What surprised me somewhat was the fact that neither within the German nor within the French line units did I come across a case wherein the Murphy button had been used. The fear that I expressed in another paper, some twenty years ago, that the indiscriminate use of it in supra-public sections is fraught with dangers, that often the sigmoid flexure would be found so narrow as to obstruct its passage through it, was vindicated at the front. French and German surgeons alike told me that in their hands it did not act so brilliantly as we saw it work in the hands of our late lamented John B. Murphy.

The First Dressing Station

In some of the first dressing stations, both in France and Germany, I saw some dangerous scalp wounds that had received immediate and adequate attention. All causative factors of compression had been removed and the wounds aseptically treated, with the best of results. However, not all serious cases could be treated there, because despite the fact that there was a more than ample ambulance service, with a great number of autos at their disposition to take care of the wounded, by fetching them from the *Poste de secours* or the *Truppen-Verbandplatz* to the *Hospital de Campagne* or the *Feld-Lazarett*, yet the evacuation stations were nearly always full to an overflowing and hence, not all that were there could be attended in an adequate manner. Many of the cases therefore I witnessed myself were taken from the front directly, either to the *Hospital de Campagne* or to the *Hospital d'Etape*. All they were given was some kind of a first dressing or medication; and then they were sent on their way where better care and attention could be given them. Each wounded carried, tacked on his jacket, a little note that gave in a general way a history of the case, the nature of the wound or malady, and what medication or treatment were already administered. When, however, after a serious engagement, or after a big battle had been fought, the number of wounded brought in reached into staggering ciphers, then, and only then, were the activities of the surgeons wholly, and solely limited to the most urgent cases, either of the seriously wounded or the gravely ill ones; while the others were expedited with the greatest dispatch toward the territorial hospitals, where they were evenly distributed and properly taken care of; but, under no circumstances was one put on his journey if there was the slightest doubt in the mind of the attending physician or surgeon that such a journey might aggravate the case or imperil the life of a patient.

Immense Casualties

If we pause for a moment and reflect that after the battle at the Marne was fought and won, the

casualty list of the French showed the stupendous figure of 112,000 wounded alone, and that during the twelve days that followed the beginning of the hostilities at Ypres, 100,000 wounded German soldiers were sent forth from the distributing station of Brussels toward Germany, then one will easily comprehend the why, as well as the where, of all surgical preparations, no matter on what a vast scale of preparedness undertaken, had, of necessity, to remain *inadequate*. Not even the well-organized German sanitary service could cope with it, despite the fact that they were evenly distributed and magnificently equipped all along the territory of the war zone. From Attigny to Vouziers, to Rethel, to St. Quentin and from Caudrey to Valenciennes and Brussels, their sanitary units were marvels of efficiency and order. Wherever and whenever it was feasible railroad branch lines were established that ran into and connected with the big trunk or main lines, wholly and solely devoted to the service of the wounded, who, over these lines were sent back to Germany to be treated there at the various hospitals adapted for their needs.

Rethel, at the time of my visit, was only 10 km. distant from the firing line. The place bore all the evidences of the terrible havoc war had played there. Bombarded first by the Germans, precious little left whole of it, it was again bombarded by the French, who finished by destroying the little that had escaped the German destruction. San Francisco, after the terrible earthquake, I am sure must have looked like a well-kept garden in comparison with the sight Rethel offered, and yet in this place of desolation the Germans dug themselves in like moles, and I well recollect now of what once was a fine factory, but then was merely a fragment of a ruin, which the Germans succeeded in rebuilding and converting into a military hospital with a capacity of 1,650 beds; besides, this factory-hospital was fully equipped with the best and latest radiographic machinery, with well-ventilated, spacious operating rooms, disinfecting and sterilization compartments, such as one would expect to find in a first-class hospital in New York or Chicago.

Isolation Hospitals

In and around the nearby villages, with the hospital as a central unit, thirty-five or more barracks were built around, which, in their turn had a capacity of 2,700 beds. These barracks were, for the most part, used for observation and isolation of infectious diseases, notably typhus fever and small-pox. The sections were divided into three groups; in the first group the very severe cases were kept under constant attendance, in the second group the convalescent found lodgment, while in the third group the quarantined ones were kept under constant observation. All sick mem-

bers of that unit had to pass through all these three groups, and they were not discharged from the third until their feces, which were examined weekly, had not shown for three consecutive examinations that, as far as specific organisms are concerned, the findings were absolutely negative. This proved the cases to be immune, and only after such negative tests were they discharged as cured.

These barracks were for the most part erected in some forlorn, uninviting, barren place, where, as a rule, the mire was kneedeep, yet the convalescent Germans succeeded in transforming these desolate places into splendid garden spots. The military authorities encouraged it, and even offered premiums and prizes for the best kept or most beautifully laid out garden spot; and all this was going on while the big cannons roared and the shrapnels whizzed and shrieked their song of death all around.

In these barracks as well as in other units I found the most modern hygienic principles applied and translated into practice. The feces were all collected and disinfected with chloride of lime, everything was cleanly washed and sterilized, from the covering of beddings, bed sheets, etc., to the drinking water, wine, eating stuff, utensils and so on. Everything had to pass through the hands of capable inspectors.

To each sanitary unit there was attached a biological cabinet. The hospital sections were all lighted by electricity. Where the electrical plant was out of order, or was wanting, there was at some little distance a place where the electrical energy was generated. Even in places which, prior to the war, never knew of the existence of such a thing as electricity, under the exigencies and stress of the war, electric service was there. Even the trenches were so supplied, and there the force served a double purpose, to wit, for lighting as well as for heating purposes.

Everywhere I found established sections for full baths, sitz-baths and douches. In a little village near the firing line, where the roof had to be reconstructed, I found such a balenaria. At the time of my visit there some Prussian and Saxon soldiers, who just had come out from the trenches, were taking the baths. First, they changed clothes; then were examined and assigned to a bathing section. One section was set apart as the *Entlausungs-Stelle*, to rid them of vermin and scabies. This section was fully and adequately equipped, in addition, with special and sterilization apparatus.

Radiography

Attached to every surgical section there was a radiographic cabinet. Outside of these fixed cabinets there were maintained radiographic cabinets on either auto trucks or on trucks drawn by horses, ready to be used here, there, everywhere, where the

urgency of the case required their presence. I saw many of these apparatuses in the field hospitals as well as in the territorial ones, and I saw some ambulatory ones at the great military units. Sanitary authorities prefer the fixed ones to those of the ambulatory type, because the loading and unloading always entailed a loss of time: besides the transportation in itself from one place to another involved the danger of getting them out of order.

It seemed to me that Germany was compelled to erect, create and establish medico-surgical units, despite all difficulties that were in her way and in the very nearest vicinity of the firing lines, in a territory over which constantly the storm of raging battles centered; and all these units were amply provided with adequate means to be in shape to cope with all sorts of conditions and emergencies that arose out of these battles. The territorial hospitals were reserved to look after the care of the convalescent, or to handle the after-treatment of all traumatic cases. Besides these there were instituted reclaiming stations to make the maimed ones, as far as science permitted, capable to resume their physical functions by means of artificial apparatus, etc.

However, after a big sanguinary battle, when the number of wounded assumed staggering proportions, then, and only then, was it that those who did not require immediately urgent treatment, were directed at once toward Germany, and in this effort they were helped by the wonderful net system of railroads they had devised especially for that purpose.

Among the French centers it was my good fortune to visit. Creil and Amiens stand out in bold relief.

Amiens is one of the most important hospital centers of the French army. At the time of my visit, it was some 20 odd kilometers distant from the firing lines, with which the city was intimately connected by a very efficient automobile service that radiated in all directions. I visited there various hospitals. Some units were located in public buildings, others were in the civic hospitals of the city. One of the units there belonged to the 14th Division of the Ninth Army Corps, ably supervised by Prof. Ambroise Monprofit of Angers.

The wounded were brought into Amiens either by automobiles, or by vehicles drawn by horses. They arrived either directly from the trenches or from some *Poste de Secours*. They all were landed under the vast roofing of the railway station. Each and every one had his identification schedule pinned on him. This schedule gave in a general way a summary of the nature of the wound or illness of the patient. There at the station they were re-examined, and each and every one assigned to one of three distinct classes.

To the first belonged all those who needed but little treatment, at best only a few days of rest to recuperate their strength, and these after a short period were promptly returned to the front. To the second were assigned all those ill and wounded who needed a *protracted* course of treatment. These were sent home to their territorial and departmental hospitals. To the third and last class were assigned all seriously ill and wounded who needed urgent attention.

Often these cases were treated right at the station, but wherever and whenever practicable it was preferred to send them to the hospital units of Amiens itself. As soon, however, as they were in condition to travel, they were sent from there to a more distant hospital.

Evacuation Hospitals.

At the evacuation hospital of Amiens, located at the railway stations, I saw 300 beds constantly kept in readiness to receive patients. I found there operating rooms, as well as a perfectly maintained emergency service, ready to minister and to take care of the most urgent cases. At one time I witnessed the arrival of 30 autos, full of wounded. I saw each one re-examined and assigned to his proper class. I saw them placed on a sanitary train of third-class carriages, taking these heroes of France back to their home departments to recuperate.

All went on with an order and precision worthy of the highest encomiums and traditions of the French Army. I heard no voice raised in protest, nor did I hear any one complaining; they suffered in silence and with dignity—these noble sons of a truly great nation.

Hospital Trains.

The trains, I was told, could each accommodate 600 wounded. They differed from the German troop trains in that no medical officer went along with them. Only the nurses went with them, and they saw to it that nothing was wanting. However, in cases of need, a medical officer was always in attendance or could be easily found at any of the principal stations these wounded and ill had to pass through on their long journey. Those cases who by reason of the voyage became aggravated were promptly removed from the train and taken to the hospital unit of that place.

By direction of the Central Command of Paris that has supervision of such cases, the wounded and ill were sent from the evacuation hospitals to the various departmental and national hospitals, and distributed among these; according to the beds, each unit had at its disposition. The sanitary train officials were beforehand apprized by wire of the precise time of the arrivals of such trains. These wires went also to the officers of the departmental headquarters, who were charged to see to it that the correct division and distribution of the wounded should be made.

Being informed daily of the train movements, these officials were, therefore, beforehand in a position to take the necessary and appropriate steps to distribute the new arrivals between the territorial hospitals that were best adapted for the handling of the cases, according to the nature of the disease or the degree or severity of the wound of the individual.

Central Territorial Hospitals.

In France, by virtue of the proximity of the firing lines, the main central territorial hospital units are located at Paris, Lyons and Dijon. But, where pure air and ideal climatic conditions are sought as adjuvants to treatment, then Nîmes, Menton, Cannes and all the beautiful Riviera towns easily win the palm; hence southward, toward the land of sunshine, great numbers of the wounded are directed. By reason of what is stated above, the French service had not, and did not, need nearly as many sanitary units as the German service was required to maintain, nor were the French units at the front so lavishly equipped as the Germans simply because the French had, and still have, ample facilities to fall back on their home units. I have seen patients with scalp wounds exhibiting all the symptoms of compression coming directly from the front, arriving at territorial hospitals, having traveled probably for a few days, only to undergo treatments there. I saw compound and comminuted fracture cases, under the same conditions, who had received only a primary dressing.

Changing Methods as War Changes.

Such a sanitary service was, up to the present war and for all intents and purposes, an adequate one, simply because the lesions produced by the firearms of former wars always pursued a benign and favorable course; hence it was good surgical practice to send the wounded, after they had received either an emergency or primary dressing, to some better equipped hospital. But this war is an entirely different proposition; and this fact the French were the first to recognize. Hence their front service today is by a far cry a better one than the one I saw nearly four years ago. Today their front service is second to none, and those who have charge of the service are the master minds of the medico-surgical world of France—and that means something.

Now what are the causes that produced such a change? Well, they are manifold indeed! Foremost, however, among them all is the fact that the small firearms had to give way to grenades and shrapnel and cannon of gross calibre. Translated into traumatic results, this means that wounds produced by such weapons tell a more sweeping and disastrous tale.

And while as late as the Italo-Turkish-Tripolitan war, or to come still nearer home the last two Bal-

kan wars, the number of wounded hit by balls from rifles still amounted to nearly 85-90%, while those produced by cannon or other gross caliber arms amounted only to 10%, at best to 15%; today the reverse marks more nearly the truth.

Character of Wounds.

I saw more wounds produced by cannon than due to rifle shots. True, the reason may lie in the fact that the rifle wounds heal quicker, hence there was less opportunity for their observation by a mere casual visitor than by a regular attendant. As a matter of fact, I saw many soldiers who had been wounded twice or thrice, and who had returned to the trenches after only a few days of illness. In this instance I refer to rifle wounds produced by small caliber projectiles thrown from a *great distance*, whose vital force is quite *irrelevant*. But there is a different tale to tell in the case of wounds produced by the selfsame arm and projectile thrown out at a *short distance*, whose disruptive force in consequence is an *enormous* one. Under such latter conditions, wounds thus produced assume quite a grave aspect indeed, simply because the explosive character produces in the organs hit extensive, destructive lesions, often tearing everything to pieces—similar to the destruction produced by a bomb. Especially is this true of organs that contain liquids, such as the heart, containing blood; or semi-solids, such as the cranium, containing the cerebral mass; while in the liver or muscular system it produces lacerations having but a small entrance, but in which the wound becomes larger and larger and more conical in shape as it nears the exit of the projectile.

Another aggravating factor that has often been observed is the fact that, not infrequently, the projectile in its trajectory, and before reaching and hitting its victim, encounters in its course some hard impediment that flattens it—and in this condition it ricochetes or rebounds, hitting the soldier in this rebound. Wounds thus produced are of necessity irregular in shape and by far more lacerative and destructive in character than are the wounds due to other projectiles. Inasmuch, as nowadays battles are often fought out with the opposing trenches at a short distance from each other, such mishaps are of quite common occurrence. When these experiences, at the beginning of ~~the~~ war, were quite new and their causative factor still was unknown, it led to the most acrimonious accusations, hurled by the contending armies at each other, of being guilty of uncivilized warfare by the use of dum-dum bullets. This much for wounds produced by rifles.

Shell Wounds.

Now, how about the wounds inflicted by artillery? Here, too, even in a greater degree, present warfare has produced new and terrible types of lesions, un-

known before in seriousness and destructiveness. They are particularly due, first of all, to the more extensive use of cannon of gross calibre, as well as to the great state of art and perfection inherent in these monster weapons; hence the requisite greater efficiency in marksmanship has evolved a destructive potentiality never heard nor dreamed of before, so that, nearly every shot fired carries destruction with the maximum of telling force. Not a little credit for this precision is due to the eyes of the army—the bird-man in his aeroplane—who with the greatest precision maps out and signals the enemy's exact position.

I have noticed but little difference in the effects produced in wounds due either to the French grenade or to the big German projectiles. The French grenade, such as are projected by the 75 cm. cannon, scatters itself into infinitesimal pieces as soon as it bursts, increasing thereby to a manifold degree the lesive power of the projectile, yet it inflicts but a small wound; the German projectiles burst into large fragments, hence, they produce a far larger wound. Be this, however, as the case may be, the one luminous fact remains, that owing to the greater number of cannon used in this conflict, the number of shell wounds by far surpasses those produced by rifles, and consequently the irregular fragments of the grenades or shrapnels are productive of very serious lacerations.

Aside from this fact, there is another element inherent to the gross caliber weapons in that the wounds so produced are often complicated by the danger lurking in infection from pieces of clothing or other septic materials carried by them into the wounds, while rifle wounds cause more clearly defined and less dangerous lesions. Another ominous factor of the grenade is its property of bursting on the ground and scattering around clouds of earth-works, stones and dirt, each of which increases the danger of infection.

Such complications were observed at the beginning of hostilities and they found their expression in the great number of cases that developed tetanus or gangrene. However, nowadays, judging from the reports, such cases are happily of rare occurrence, thanks to the energetic prophylactic measures instituted. True, some inevitable suppurative cases are still manifest, but better results are gained day by day, and soon these will pass into history as things that have been, but are not now, to be dreaded.

Conservative Surgery.

Out of evil there always arises some good, some blessing to mankind; and thus out of the turmoil and strife of this gigantic world war conservative surgery came to the fore and into its own. Now no longer are amputations made needlessly, but wherever and whenever possible, a limb is saved. Hence,

we may well be filled with professional pride at the achievements of our profession at the front.

How were these remarkable results brought about? Simple enough! They are due to the great influence civilian physicians and surgeons have brought to bear on the professional medical corps of the armies and navies of the contending forces. This commingling of the two great branches of the profession, the civil and the military, in one homogenous body, was productive of an efficiency never heard of before.

I saw within the German lines, working as superior military officers, the greatest luminaries of the medico-surgical world of Germany; thus I saw Peyer at Rethal, Garre at Vouzier, Angerer, Schemmel and Neumann at St. Quentin, while Bier divided his time between the front and his clinic at Berlin. France, on the other hand, can boast of the services of Tuffier, one of the greatest living clinicians. He has the rank of a general, and I saw him supervise the surgical field organization. Besides him, there were at the front such eminent men as Faure, Cuneo, Proust, Schwartz and Lecine, While Baudet was at the head of the Italian hospital for the wounded in Paris, while Quénu, Delbert, Monclaire, Thierry, eminent French surgeons, each a master mind, directed somewhere in France some important territorial hospital.

The Civil Hospitals.

In every city in France, as well as in Germany, the civil hospitals are given over to the care of the wounded; everywhere the military cases take precedence over the civil ones, and where such a course was feasible the latter were mixed up with the former. Special care and attention is given to the various specialties. Thus, each unit had an ophthalmological, an aural, a genito-urinary, as well as orthopedic departments, and last but not least a department for brain and nervous diseases. At the head of each department an authority of national or even international fame, was placed.

The city of Valenciennes had completed an imposing building that was to serve for school purposes. It was just to be inaugurated when the Germans took possession of the city. They converted this building into a great neurological institute, with Oppenheim, the great neurologist, at the head of it, while the far-famed French neurologist, Sicard, is at Marseilles at the military hospital of that city. Imbert, professor of clinical surgery of the University of Marseilles, is at the head of the surgical department of the same hospital.

In Germany, to each sanitary unit belonged a chemical, a bacteriological, as well as a hygienic cabinet, and each of these were directed by the famous professors, by men of known ability in biological sciences, by virtue of the positions they occupied at the various universities.

I believe, from observation, that the harmonious blending of the military surgeons with the celebrities from civil life to whom military ranks and emoluments were given commensurate to, and in keeping with, their high civil status, contributed in no small measure to the splendid results to which the sanitary services of the contending armies of France and Germany may justly point with pride; because from that intimate intercourse and exchange of ideas, there sprung into existence a sanitary organization that was equal to any emergency, ready to cope with any vexing problems that the gravity of the moment had engendered—to the everlasting glory of the armies to which they belonged, and, as well, a blessing to the thousands and thousands of wounded or ill committed to their care.

The Red Cross.

Another great factor that contributed to the top notch efficiency of the sanitary service was the help and the support that the Red Cross organizations brought to the sanitary services of their respective countries.

In France, as well as in Germany, they placed their tremendous resources at the disposition of the sanitary service of "la patrie" or "the fatherland." They assumed the task of training and educating nurses for the service at the front, and they controlled and managed hospitals; they organized and supervised troop trains for the transport of the wounded; they dedicated themselves, in a most unselfish manner, to the sanitary and hygienic defense of their armies.

Right on the heel, at the declaration of war, while the military authorities called all men to their respective colors, the Red Cross, as well as all other societies that were intimately related or dependent thereon, started out to mobilize a true womanly army, as a complement to and as an auxiliary for the respective fighting armies. And to the glory and everlasting fame of the women of both countries, they did their duty and responded nobly, conscious of the great need their land and nation had for them.

Thus, in Germany, the "*Schwestern*" or sisterhoods, occupy even in peace times a very important position. They have charge of the training of all nurses; they superintend not only governmental and civil hospitals, but they also administered private hospitals. They have organized, managed and solved the great field sanitary and hygienic problems. Wherever there was suffering, the Red Cross sisters were there—ready to do their part, to help heal the wounded, as well as to mitigate the horrors of war. Well trained to a T, efficient in the extreme, no wonder, then, that such an organization was a power for good.

There is no service, no matter how humble or ever so exalted, ever so devolving the highest skill

and rarest acumen, to which these Red Cross Sisters everywhere do not lend themselves. Here they attend to the official or the private correspondence of the wounded; there they keep the registers or act as bookkeepers. This one is the presiding genius of the scullery; the other has a knack for keeping the instruments in trim shape, while still others act as assistants to physicians and surgeons, or as radiographers, as chemists, bacteriologists, mechanotherapeutists, etc. etc.

Red Cross Hospitals.

The French Red Cross embraces three distinct and autonomous organizations.

(a) *La Société Des Secours aux Blessés Militaires,*

(b) *La Union Des Dames Françaises,*

(c) *La Union Des Femmes de France.*

All these three societies have control in peace time over many schools for nurses and hospitals, among which *l'Hospital, Ecole de la Société des Secours aux Blessés Militaires à Paris* is a model in itself.

When war was declared, a great number joined their ranks with an enthusiasm so characteristic of the French nation.

Those who in peace time had gone through the regular course prescribed for nurses, and who had passed a satisfactory examination, were, of course, given the first positions available in the Red Cross service, while for the later arrivals shorter courses were provided to make them available for practical service in the shortest possible limit of time.

Fortunately for France, there came into existence an intelligent volunteer body of nurses that placed the three societies in the enviable position to be able to furnish in the shortest possible time an adequate force to serve in 1,561 hospitals, with a supervision of 102,579 beds. They totaled over 20,000, sufficient to cope with all cases, even at times when the influx of wounded almost seemed to be an inexhaustible stream.

They were there, those noble women of France, those Red Cross nurses—ever alert, ever attentive, ready to do and to give of the best that was in them in the sacred name of patriotism and humanity.

Lyons, for instance, had at the time of my visit the stupendous number of 25,000 beds, supervised for the most part by members of the Red Cross; yet after the battle of the Marne, this number was by a far cry not sufficient. The very large number of wounded that needed aid and attention, the troop trains going and coming, loaded with soldiers, created the necessity to send the hospital trains over the bigger trunk lines to larger and better equipped military centers; and thus it came to pass, that whilst such centers as Paris, Lyons or Marseilles were crowded to overflowing other smaller

centers situated at some branch line and far from the front remained empty.

Immense Number of Casualties.

Such staggering numbers as stared us in the face were not dreamed of by any of the belligerents, hence the service was caught inadequately prepared; but there was never a time when any wounded or suffering did not receive due attention and proper consideration—all received the treatment that France owed to her sons and defenders. The French Red Cross ever alert, ever on the *qui vive* for such emergencies, was there to bridge over any difficulties arising.

The sphere of action, as can be readily perceived, was not limited therefore to the hospital service alone; nay, on the contrary, at every railroad station where hospital trains were passing, aid stations were erected and soon in full swing. Here society ladies rubbed elbows or took turns with their sisters of the working classes, to look after the welfare and comfort of the wounded and ill; there they prepared nourishing food and, where permissible, dainty dishes or delicacies, cigarettes, medicines, etc., etc. There they had also rest beds, for those who on account of the gravity of their cases could not continue their voyage.

Germany's Ready-Made War.

But in Germany all this was different, owing to her organizatory talent, and above all, the fact that she had for forty-three years prepared herself for the coming struggle—everything had been made in readiness; everything had been foreseen; nothing had been left to chance; nothing was overlooked. Her Red Cross system was German-made, that is to say, patterned after the army and closely knitted with it. Hence, the Red Cross on the other side of the Rhine was established on a purely military basis, so that, not only the soldiers, but even the stricken civil population were looked after by them—in war times just the same as in times of peace.

Thus von Behr Pinnow organized from among the Red Cross sisterhood, a special training corps of nurses, whose sole *raison d'être* was to look after and to take care of the health of the babies in order to stem the frightful mortality among them on the one hand, and to see to it that the future defenders of the fatherland might grow up healthy in body and sane in mind, according to the Hippocratic aphorism: "*Mens sana, in corpore sano.*"

French Efficiency.

With all this, the spirit of sacrifice, as well as the efficiency, of the French Red Cross is equal in every respect to that of the German organization, only its division into three organizations, each independent of the other, instead of being welded into a strong homogeneous unit, is to my way of thinking, rather a drawback, however small I confess.

The American Red Cross.

I'm rather partial to our American Red Cross organization. It is an organization that is unique—barring none. It rests on a very strong and solid foundation because organized along military, sanitary lines. The great number of officers, nurses, professional and volunteer, that belong to its rank and file, the close affiliation it keeps up with the army and navy, makes it one of the most formidable and efficient organizations of its kind in the world. It has the fullest support of the Government. Our President, as Commander-in-Chief of our Army and Navy, is ex-officio Commander of the Red Cross, and our highest military and naval officers are members of it. The whole machinery of the United States offensive and defensive power stands behind it, and above all it has the unstinted and loyal support of our nation, that is to say, of every true, red-blooded, patriotic American.

America Called to Fight.

And now that America has been called upon to fight the battles of and for the democracies of the world, the American Red Cross will play in this great world drama, as it has played in the past, a part worthy of its best and noblest traditions, which are the traditions of our Army and our Navy. It will do its duty—nobly, efficiently, abreast of the times—conscious that the eyes of humanity look on it as the embodiment of all that for which our flag stands, which is the visible symbolism of true American ideals.

America to the Front.

And now as to the aftermath—after this world war has been fought and won with the aid of our forces—what shall we do with the wounded and maimed American soldiers? When Johnny comes marching home, minus an eye, arm, leg or both, what shall we do with him? Shall we in the first transport of joy at the reunion gush over him, idolize him for his natural life into unproductive idleness? I say, no; a thousand times no, and this with all the earnestness at my command. He has done his duty, faithfully, nobly, so have hundreds and thousands of other Johnnys done, in just the same unselfish, patriotic manner; and some of them, aye, a great number of them, have paid the supreme sacrifice—slumbering now the eternal slumber of the hero—decked by the sod of a foreign country—so that their own soil may be unmolested and free from the tread of the enemy; so that their own country may live.

The Debt of Our Soldiers.

But this country has contracted a debt; it is Johnny's debtor now, as it was Johnny's creditor before, and that debt is not paid—cannot be paid—either by putting him on a back shelf as Uncle Sam's pensioner, or by placing him on the scrap heap for the rest of his life, selling pencils and

shoestrings on some corner curbstone—a burden to himself as well as to those who are around him.

It is work and service that the American soldier is asking of his fellow American citizens, and not charity!

Work ennobles; charity degrades. A true American never degrades himself.

Let Us Follow the Example of France.

France, full well recognizing the great service her sons had rendered to her in the hour of distress, and particularly recognizing at its fullest worth the sacrifice of the one who has suffered loss of a limb—France, I say, with all the finer emotions she is capable of forcibly repressed—gulped them down, and looked at the proposition that stared her in the face from the angle of justice and common sense, in a cold scientific way. She wanted to be just to her heroic sons, and to this end she enlisted the coöperation of every citizen, and particularly of every employer. She did not pass the hat around, nor did she ask financial aid of anyone, least of all the employer, to contribute. Nay, just the reverse. The Surgeon General appealed to them not to follow the dictates of their hearts or patriotic impulses to create new and unnecessary vocations, such as watchman, doorman, or information clerk, for the use and benefit of the crippled soldier. On the contrary, every employer was and is asked to open his factory, his shop, his place of business, to crippled and disabled soldiers. While the Surgeon-General's office assured the employer, that thanks to the re-education and reclaiming forces of the Government, the soldiers will fully be able to earn every cent of their salaries.

Let us do the same!

Re-educating the Maimed.

Let us re-educate the maimed. Let us show him our true appreciation of his worth and of the service he has rendered to his country, by giving the country an opportunity to put him in a position to earn his own living; only so, and in no other way, can we pay our debt to him; only so will he not lose his self-respect and ambition; so that, with head erect, into the shops, into the offices and into the professions he may go to take his place at the banquet table of life and to compete with his normal fellowmen as their equal.

By careful training in reclaiming him, he will again become self-supporting, a useful and productive member of the community wherein he lives. Our Red Cross institutions are admirably fitted to reclaim the crippled and the blind. Coddling a disabled soldier is the worst thing that could happen to him, not barring even German bullets. Do not let us fall into the errors we committed after the war between the States. Reclaim the maimed, as fully 80% can be reclaimed. It is not a gift you are bestowing, but paying a debt, a sacred debt.

Our Boys Over There.

Our boys Over There will soon be counted by the millions. They went with a will—if needs must be, to die. Thousands will come home crippled for life. Help them to conserve their grit and aggressive spirit, so truly American, they possessed ere they were inducted into the Service.

Hence, let us right from the start, erect great reconstruction hospitals—spacious enough, fully equipped enough, to house and take care of thousands of these unfortunates. One such big hospital should be erected at least in each of the 16 military districts we possess; there the work should be developed by a medico-surgical staff second to none. One of the first considerations in the reclaiming of a man is to learn his preference and aptitude for his new vocation or position, as a man must like his work; it must not be distasteful to him, else he will not accomplish anything. The task is a very hard one, I admit, to find always a suitable occupation for one who is suffering certain disabilities, but it is not an impossible one, especially if we approach our task by way of individualization. We must study the man, learn to individualize each entity as a new problem, because in ultimate analysis, each human being is a law unto himself.

Plastic Surgery in Reconstruction.

Above all, plastic surgery should come into its own, for cases needing the work of the plastic surgeon are different from the case of the ordinary disabled soldier because they are so terribly disfigured that even those who are near and dear to them, their own wives and children, would shrink from them in horror. Now by plastic surgery, these frightful cases can be greatly improved—new noses, new lips, new mouths, new ears—and by making a portion from a rib even new jaws can be made by the dental surgeon, so that when they leave the hospital they may look almost normal.

The Blind.

Next in importance are blind ones. This war has already demonstrated that even the blind may be reclaimed. Some may work at their own homes, some in special shops for work especially adapted for the blind. Some may work in certain industries, while others even in the professions. One of the most eminent specialists in Chicago is a blind man. So, then, the blind, or those who had lost only one eye, the deaf, the gassed, the victims of shell-shock, the one-armed, the one-legged, or those who had lost both limbs, or who have been crippled by inter-current diseases, or diseases of one kind or another—they all constitute the vast army of creditors of Uncle Sam, and they must be paid—and will be paid—by the reclamation service. Let this be a special branch of the Surgeon-General's office—large enough to cope with all phases of problems that may confront us, because it must cover ade-

quately, efficiently, every field that has been or will be influenced by the war.

Brains and Brawn Will Win the War.

"But it takes money to do all this." That's true, but we are not a niggardly nation. We are told "Food Will Win the War," "Coal Will Win the War," and a thousand other things will win the war; but permit me to say that it is brains and brawn that will win the war—and the American soldier has them both. He who for some reason or another is physically disqualified to serve, has no place with the American Army or Navy, but he has a right, and that right should be given him, to serve his country by paying a tax of at least five dollars a year, or greater according to his income or earning capacity.

In Europe, where compulsory military service by conscription has ruled, with the exception of Great Britain until late, every youth who has attained the age of 20-23 years, must present himself for army service. They serve, as in Austria for instance, three years in the line, seven years in the reserve,

and 14 years in the territorial army. Those who are disqualified to serve must pay a military poll tax of 5.00 krone every year for the period of 25 years, that is to say, from their twentieth to their forty-fifth year. We can and ought to pay the same tax. Congress has the power, and ought to enact some similar law. Such a tax is no more than right and it will yield revenue enough for the purpose outlined above.

We Must Win the War.

We are now in this great war. We went into it with a purpose—with a grim determination to win; **AND WIN WE WILL!**

The American Sanitary Service plays and will keep on playing no mean part—it's a portion of the brains that helps our boys to carry Old Glory to Victory, because it is part and parcel of our glorious Army and Navy. And when history shall pass its verdict on their work—their immortal deeds of valor—may it say of them all: "Well done, ye servants and benefactors of humanity!"



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